Message

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Subject: STICS: Clearance Completion: #ORD-017673: Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment

The clearance for this product is complete:

- **Product type, subtype:** Journal Article, Peer Reviewed
- **Product title:** Cumulative effects of antiandrogenic chemical mixtures and their relevance to human health risk assessment
- **Author(s):** Howdeshell, K,A. Hotchkiss and E. Gray
- **Initiator:** Earl Gray,ord/nheerl/tad/rtb
- **ORD Tracking Number:** Tracking # ORD-017673
- **Product Description / Abstract:** Toxicological studies of defined chemical mixtures assist human health risk assessment by establishing the manner by which chemicals interact with one another to induce an effect. This paper reviews how antiandrogenic chemical mixtures can alter reproductive tract development in rats with a focus on the reproductive toxicant phthalates. The reviewed studies compare observed mixture data to mathematical mixture model predictions based on dose addition or response addition to determine how the individual chemicals in a mixture interact (e.g., additive, greater or less than additive). Phthalate mixtures were observed to act in a dose additive manner based on the relative potency of the individual phthalates to suppress fetal testosterone production. Similar dose additive effects have been reported for mixtures of phthalates with antiandrogenic pesticides of differing mechanisms of action. Overall, data from these phthalate experiments in rats can be used in conjunction with human biomonitoring data to determine individual hazard indices, and recent cumulative risk assessments in humans indicate an excess risk to antiandrogenic chemical mixtures that include phthalates only or phthalates in combination with other antiandrogenic chemicals.
- **Tracking and Planning**
  - Task ID:
  - Task: N/A - Not Applicable
  - Product Title: N/A - Not Applicable
  - Product Description: N/A - Not Applicable
  - Project:
  - Topic:
  - Research Program Area:

- **Product Category:** Does not require Advance Notification
- **QA form attached in STICS?:** Not Applicable
- **QAPP Reference:** N/A
- **Keywords:**
  - cumulative risk assessment
  - phthalates
  - antiandrogenic pesticides

- male reproductive tract development
- mixtures
- TAD 16-043
- Children's Environmental Health

- **Journal Name:** INTERNATIONAL JOURNAL OF HYGIENE AND ENVIRONMENTAL HEALTH
- **DOI:** https://doi.org/10.1016/j.ijheh.2016.11.007

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